

EXPRESS MAIL MAILING LABEL: ER 688408059 US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of: Soberanis et al.

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Title: CHEMICAL DELIVERY SYSTEMS AND METHODS OF DELIVERY

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CONTINUATION APPLICATION UNDER 37 CFR § 1.53(b)

PRELIMINARY AMENDMENT

Dear Sir:

Prior to examining the above-identified application, please amend the application as follows:

In the Specification:

On page two, immediately following the inventors' names and immediately before the "Background" paragraph, please include the following paragraph:

RELATED APPLICATION

This application is a continuation of prior application No. 09/968,566, filed on Sep. 29, 2001, which is a continuation of application No. 09/870,227, filed on May 30, 2001, now Pat. No. 6,340,098, which is a continuation of application No. 09/568,926, filed on May 11, 2000, now Pat. No. 6,269,975, which is a division of application No. 09/224,607, filed on Dec. 31, 1998, now Pat. No. 6,098,843, which is a continuation of application No. 09/222,003, filed on Dec. 30, 1998, now abandoned.

A copy of amended page one is attached.

In the Claims:

Please add Claims 1-48.

CHEMICAL DELIVERY SYSTEMS AND METHODS OF DELIVERY

Inventors: David Soberanis & Randy Forshey

RELATED APPLICATION

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BACKGROUND

The present invention relates generally to systems and methods for delivering of liquid chemicals, and more particularly, to systems and methods for delivery of liquid chemicals in precise amounts using logic devices and multi-reservoir load cell assemblies.

The present invention has many applications, but may be best explained by considering the problem of how to deliver photoresist to silicon wafers for exposure of the photoresist in the process of photolithography. To form the precise images required, the photoresist must be delivered in precise amounts on demand, be free of bubbles, and be of precise uniform thickness on the usable part of the wafer. The conventional systems have problems as discussed below.

As shown in Figure 1, a representative conventional photoresist delivery system includes supply containers 100, 102, typically bottles, which supply photoresist to a single-reservoir 104 by line 117, which is connected to supply lines 106, 108 monitored by bubble sensors 110, 112 and controlled by valves V1 and V2. The bottom of the reservoir is connected to a photoresist output line 114 to a track tool (not shown) which dispenses photoresist on the wafer. The space above the photoresist in the reservoir 104 is connected to a gas line 118 which, based on position of a